

Original Patent

Patentees: Alex Kalnitsky  
Yih-Shung Lin



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Patent No.: 5,986,330

Title: ENHANCED PLANARIZATION  
TECHNIQUE FOR AN  
INTEGRATED CIRCUIT

Issued: November 16, 1999

Atty Dk No.: 93-C-023C3

Reissue Application

Applicants: Alex Kalnitsky  
Yih-Shung Lin

Serial No.: 09/998,595

Title: ENHANCED PLANARIZATION  
TECHNIQUE FOR AN  
INTEGRATED CIRCUIT

Filing Date: November 16, 2001

Atty Dk No.: 93-C-023RE (1678-42)

**FIRST REISSUE APPLICATION DECLARATION BY THE INVENTORS**

As a below named inventor, I hereby declare:

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are listed below) of the subject matter that is claimed in patent number 5,986,330 granted November 16, 1999, and for which a reissue patent is sought on the invention entitled:

ENHANCED PLANARIZATION TECHNIQUE FOR AN INTEGRATED CIRCUIT

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the specification of which

- ☐ is attached hereto.
- ☒ was filed on November 16, 2001 as reissue application number 09/998,595 and was amended on \_\_\_\_\_ (if applicable). If the filing date, amendment date, or reissue application number are not included when I execute this Declaration, I authorize the below appointed attorney(s) and/or agents(s) to insert the filing date, amendment date, or reissue application number when they become available.

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I verily believe the original patent to be wholly or partly inoperative or invalid, for the reasons described below. (Check all that apply.)

- ☐ by reason of a defective specification or drawing.
- ☒ by reason of the patentee claiming less than he had the right to claim in the patent.
- ☐ by reason of other errors.

Errors upon which reissue is based are described as follows:

I believe that claims 1, 8, and 15 include limitations that overly narrow our invention. For example, our invention does not require "deposition of an interlevel dielectric." Therefore, we have added new, broader method claims 23 – 38.

I believe that claim 22 includes limitations that overly narrow our invention. For example, our invention does not require "an interlevel dielectric." Therefore, we have added new, broader semiconductor-structure claims 39 – 48.

All errors corrected in this reissue application arose without any deceptive intention on my part.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: all attorneys associated with Customer Number 30431.

Correspondence Address: Direct all communications about the application to:

Lisa K. Jorgensen  
STMicroelectronics, Inc.  
1310 Electronics Drive  
Carrollton, Texas 75006-5039  
Phone: (972) 466-6000  
Fax: (972) 466-7044

I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof.

I do not know and do not believe that the claimed invention was ever patented or described in any printed publication in any country before my invention thereof.

I do not know and do not believe that the claimed invention was ever patented or made the subject of an inventor's certificate issued prior to the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns.

I do not know and do not believe that the claimed invention was ever patented or described in any printed publication in any country more than one year prior to the filing date of the original U.S. application.

I do not know and do not believe that the claimed invention was ever in public use or on sale in the United States of America more than one year prior to the filing date of the original U.S. application.

I hereby claim the benefit of priority, under 35 U.S.C. § 119 and 35 U.S.C. § 120, of any foreign application(s) for patent or inventor's certificate on which priority was claimed in the above-identified issued patent.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon, or any patent to which this declaration is directed.

Alex Kalnitsky  
Full Name of Inventor

USA  
Citizenship

10095 N.W. Fleetwood Drive  
Residence

Portland, OR 97229  
Post Office Address (if different from Residence)

Alex Kalnitsky  
Inventor's Signature

2-25-02  
Date

Yih-Shung Lin  
Full Name of Inventor

Citizenship

#02-04, Horizon Tower East, 15 Leoni Hill Road, Singapore 0923  
Residence

Post Office Address (if different from Residence)

Inventor's Signature

Date

**CERTIFICATE UNDER 37 C.F.R. § 3.73(b)**



3

Applicants: Alex Kalnitsky and Yih-Shung Lin

Reissue Application No.: 09/998,595

Filed: November 16, 2001

For: ENHANCED PLANARIZATION TECHNIQUE FOR AN INTEGRATED CIRCUIT

STMicroelectronics, Inc.

(Name of Assignee)

a corporation

(Type of Assignee, e.g., corporation, partnership, government agency, etc.)

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certifies that it is the assignee of the entire right, title and interest in the patent application identified above by virtue of either:

- A. ☐ An assignment from inventor of the patent application identified above. The assignment was recorded in the Patent and Trademark Office at Reel \_\_\_\_ Frame \_\_\_\_ (copy enclosed).
- B. ☒ A chain of title from the inventor(s), of the patent application identified above, to the current assignees as shown below:
1. From: Alex Kalnitsky and Yih-Shung Lin To: SGS-Thomson Microelectronics, Inc.  
The document was recorded in the Patent and Trademark Office at Reel 6802  
Frame 190 or for which a copy thereof is attached.
  2. From: SGS-Thomson Microelectronics, Inc. To: STMicroelectronics, Inc.  
The document was recorded in the Patent and Trademark Office at Reel 010340  
Frame 0863 or for which a copy thereof is attached.
  3. From: \_\_\_\_\_ To: \_\_\_\_\_  
The document was recorded in the Patent and Trademark Office at Reel \_\_\_\_  
Frame \_\_\_\_ or for which a copy thereof is attached.
- ☐ Additional documents in the chain of title are listed on a supplemental sheet.
- ☒ Copies of assignments or other documents in the chain of title are attached.

The undersigned has reviewed all the documents in the chain of title of the patent application identified above and, to the best of undersigned's knowledge and belief, title is in the assignee identified above.

The undersigned (whose title is supplied below) is empowered to act on behalf of the assignee.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 2/20/02

Name: Lisa K. Jorgenson

Title: Director of Intellectual Property & Assistant Secretary

Signature: Lisa K. Jorgenson

RECORDATION FORM COVER SHEET  
PATENTS ONLYU.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

## 1. Name of conveying party(ies):

Alex Kalnitsky, Yih-Shung Lin

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

## 2. Name and address of receiving party(ies):

Name: SGS-Thomson Microelectronics, Inc.

## 3. Nature of conveyance:

☒ Assignment☐ Security Agreement☐ Other☐ Merger☐ Change of NameAddress: 1310 Electronics Drive, Carrollton TX  
75006-5039Additional name(s) & address(es) attached? ☐ Yes ☒ No

Execution Date: Nov 30 + Dec 2, 1993

## 4. Application number(s) or patent number(s):

(Atty. Docket SGS-011)

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s)

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B. Patent No.(s)

Additional numbers attached? ☐ Yes ☒ No

## 5. Name and address of party to whom correspondence concerning document should be mailed:

Robert Groover

B x 516349

Dallas TX 75251

214-490-5335

## 6. Total number of applications and patents involved:

1

## 7. Total fee (37 CFR 3.41).....\$40

☒ Enclosed☐ Authorized to be charged to deposit account

## 8. Deposit account number:

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

060 KM 12/21/93 08163043

1 581

80.00 CK

## 9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Betty Fornby

Name of Person Signing

Betty Fornby

Signature

12-6-93

Date

(5) Total number of pages including cover sheet, attachments, and document:

5

93410744

AC

Mail documents to be recorded with required cover sheet information to:  
Commissioner of Patents & Trademarks, Box Assignments  
Washington, D.C. 20231

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**ASSIGNMENT**

As a below-named inventor of the U.S. patent application entitled **Enhanced Planarization Technique for an Integrated Circuit**, which names an inventorship of Alex Kalnitsky and Yih-Shung Lin, and which I executed on the date indicated below, I hereby sell, assign and transfer to **SGS-Thomson Microelectronics, Inc.**, 1310 Electronics Drive, Carrollton TX 75006-5039, (hereinafter referred to as ASSIGNEE), for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the full and exclusive right, title and interest to said invention in the United States and its territorial possessions and in all foreign countries and to all Letters Patent or similar legal protection in the United States and its territorial possessions and in all foreign countries to be obtained for said invention by said application or any division, continuation, continuation-in-part, renewal, substitute, extension, re-examination or reissue thereof or any legal equivalent thereof in any foreign country for the full term or terms of which the same may be granted, and specifically including the right to file foreign applications and claim priority therefor under the provisions of any convention or treaty;

and I also hereby covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment and sale;

and I further hereby covenant that I will, upon ASSIGNEE'S request, promptly provide ASSIGNEE with all pertinent facts and documents, relating to said application, to any invention disclosed therein, or to any of said Letters Patent or legal equivalents thereof in the United States or in foreign countries, as may be known and accessible to me, and that I will testify and give evidence as to the same in any litigation or interference which may arise, and that I will promptly execute and deliver to ASSIGNEE or its legal representative, without charge but at Assignee's expense, any and all papers, instruments or affidavits which may be required, necessary or desirable for the purpose of applying for, obtaining, maintaining, issuing or enforcing said application and said Letters Patent and said equivalents thereof in the United States or in any foreign country; and I further authorize ASSIGNEE or its legal representative to make any submissions or true declarations which may be needed in connection with the prosecution of this application or related applications in the U.S. or in other countries, consistent with the requirements of the applicable country;

REF 6802 FRAME 193

AND I HEREBY AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on said invention to ASSIGNEE, its successors and assigns.

IN WITNESS WHEREOF, this Assignment has been executed on the date set forth below.

Inventor's Name: Alex Kalnitsky

*A. Kalnitsky*  
Signature: *Alex Kalnitsky*

Residence Address: 2 rue Thiers, 38000 Grenoble, France  
Today's Date, and Date Application Signed: Dec 2, 1993

Inventor's Name: Yih-Shung Lin

Signature: \_\_\_\_\_

Residence Address: 4308 Brady Dr., Plano (Collin Co.) TX 75023  
Today's Date, and Date Application Signed: \_\_\_\_\_

REEL 6802 FRAME 194

DEC -6 93

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PATENT AND TRADEMARK  
OFFICE

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**ASSIGNMENT**

As a below-named inventor of the U.S. patent application entitled **Enhanced Planarization Technique for an Integrated Circuit**, which names an inventorship of Alex Kalnitsky and Yih-Shung Lin, and which I executed on the date indicated below, I hereby sell, assign and transfer to **SGS-Thomson Microelectronics, Inc.**, 1310 Electronics Drive, Carrollton TX 75006-5039, (hereinafter referred to as ASSIGNEE), for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the full and exclusive right, title and interest to said invention in the United States and its territorial possessions and in all foreign countries and to all Letters Patent or similar legal protection in the United States and its territorial possessions and in all foreign countries to be obtained for said invention by said application or any division, continuation, continuation-in-part, renewal, substitute, extension, re-examination or reissue thereof or any legal equivalent thereof in any foreign country for the full term or terms of which the same may be granted, and specifically including the right to file foreign applications and claim priority therefor under the provisions of any convention or treaty;

and I also hereby covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment and sale;

and I further hereby covenant that I will, upon ASSIGNEE'S request, promptly provide ASSIGNEE with all pertinent facts and documents, relating to said application, to any invention disclosed therein, or to any of said Letters Patent or legal equivalents thereof in the United States or in foreign countries, as may be known and accessible to me, and that I will testify and give evidence as to the same in any litigation or interference which may arise, and that I will promptly execute and deliver to ASSIGNEE or its legal representative, without charge but at Assignee's expense, any and all papers, instruments or affidavits which may be required, necessary or desirable for the purpose of applying for, obtaining, maintaining, issuing or enforcing said application and said Letters Patent and said equivalents thereof in the United States or in any foreign country; and I further authorize ASSIGNEE or its legal representative to make any submissions or true declarations which may be needed in connection with the prosecution of this application or related applications in the U.S. or in other countries, consistent with the requirements of the applicable country;

REF 6802 FRAME 191

AND I HEREBY AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on said invention to ASSIGNEE, its successors and assigns.

IN WITNESS WHEREOF, this Assignment has been executed on the date set forth below.

Inventor's Name: Alex Kalnitsky

Signature: \_\_\_\_\_

Residence Address: \_\_\_\_\_

Today's Date, and Date Application Signed: \_\_\_\_\_

Inventor's Name: Yih-Shung Lin

Signature: Yih-Shung Lin

Residence Address: 4308 Brady Dr., Plano (Collin Co.) TX 75023

Today's Date, and Date Application Signed: 11/30/93

REF 6802 FRAME 192

11-04-1999

U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Tab settings ==> >

To the Honorable Commissioner of Patents &

101191391

1. Name of conveying party(ies):

SGS-Thomson Microelectronics, Inc.

2. Name and address of receiving party(ies):

Name: STMicroelectronics, Inc.

Internal Address: M/S 2346

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Additional name(s) of conveying party(ies) attached?

☐ Yes ☒ No

3. Nature of conveyance:

☐ Assignment

☐ Merger

☐ Security Agreement

☒ Change of Name

☐ Other

Street Address: 1310 Electronics Drive

City: Carrollton

State: TX

ZIP: 75006

Execution Date: May 19, 1998

Additional name(s) & address(es) attached?

☐ Yes ☒ No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s)

See attached Schedule A

B. Patent No.(s)

See attached Schedule B

Additional numbers attached?

☒ Yes ☐ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Lisa K. Jorgenson

Internal Address: STMicroelectronics, Inc.

M/S 2346

Street Address: 1310 Electronics Drive

City: Carrollton

State: TX

ZIP: 75006

6. Total number of applications and patents involved:

26

7. Total fee (37 CFR 3.41) ..... \$ 1,040.00

☒ Enclosed

☒ Authorized to be charged to deposit account

8. Deposit account number:

19-1353 (if any discrepancy)

(Attach duplicate copy of this page if paying by deposit account)

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Lisa K. Jorgenson

Name of Person Signing

*Lisa K. Jorgenson*

Signature

October 13, 1999

Date

Total number of pages including cover sheet, attachments, and document:

7

Mail documents to be recorded with required cover sheet information to:  
Commissioner of Patents & Trademarks, Box Assignments  
Washington, D.C. 20231

11/03/1999 NTHA11 00000201 191353 09174669

01 FC:581

120.00 CH

(920.00 DP)

(Form PTO-1595-Recordation Form Cover Sheet - page 1 of 3)

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PATENT  
REEL: 010340 FRAME: 0863

# **SCHEDULE A**

## **PENDING APPLICATIONS**

**(continuation of Recordation Form Cover Sheet-Item 4)**

<b>ST DOCKET NO.</b>	<b>APPLICATION NO.</b>	<b>FILING DATE</b>
90-C-005C1	09/174,869	19-Oct-1998
91-C-040C2	08/447,362	23-May-1995
93-C-032C3	09/007,668	15-Jan-1998
93-C-086D2	08/883,808	27-Jun-1997
93-C-092	08/225,138	08-Apr-1994
95-C-045D1	08/993,679	18-Dec-1997
95-C-061C1	08/890,636	14-Jul-1997
95-C-134	08/576,955	22-Dec-1995
95-S-135	08/797,966	12-Feb-1997
96-L-007	08/865,012	29-May-1997
96-P-098	08/918,823	26-Aug-1997
97-B-042	08/957,972	21-Oct-1997
97-B-048	08/964,571	05-Nov-1997
97-B-050	09/009,343	20-Jan-1998
97-B-103	08/977,468	24-Nov-1997
97-B-104	09/006,269	13-Jan-1998
97-B-172	09/085,559	26-May-1998
97-C-166C1	08/971,636	17-Nov-1997
97-L-007	08/995,503	22-Dec-1997
97-L-014	08/862,946	30-May-1997
97-M-027	08/962,343	31-Oct-1997
97-S-087	08/961,905	31-Oct-1997
97-S-124	08/994,738	19-Dec-1997

**SCHEDULE B****ISSUED PATENTS****(continuation of Recordation Form Cover Sheet-Item 4)**

<b>ST DOCKET NO.</b>	<b>APPLICATION NO.</b>	<b>FILING DATE</b>	<b>PATENT NO.</b>	<b>ISSUE DATE</b>
94-C-107C1	08/362,655	22-Dec-1994	5,956,615	21-Sep-1999
95-C-079C1	08/877/911	18-Jun-1997	5,955,770	21-Sep-1999
97-P-060	08/986,271	05-Dec-1997	5,952,707	14-Sep-1999



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**CERTIFICATE OF AMENDMENT  
OF  
RESTATED CERTIFICATE OF INCORPORATION**

**SGS-THOMSON Microelectronics, Inc., a corporation organized  
and existing under and by virtue of the General Corporation Law of the State of  
Delaware, DOES HEREBY CERTIFY:**

**FIRST: That the Board of Directors of said corporation, by the  
unanimous written consent of its members, filed with the minutes of the Board,  
adopted a resolution proposing and declaring advisable the following amendment  
to the Restated Certificate of Incorporation of said corporation:**

**RESOLVED, that the Restated Certificate of Incorporation  
of SGS-THOMSON Microelectronics, Inc. be amended by  
changing the First Article thereof so that, as amended, said  
Article shall be and read as follows:**

**"FIRST: The name of the corporation is  
STMicroelectronics, Inc."**

**SECOND: That in lieu of a meeting and vote of stockholders, the  
stockholders have given written consent to said amendment in accordance with**

the provisions of Section 228 of the General Corporation Law of the State of Delaware.


THIRD: That the aforesaid amendment was duly adopted in accordance with the applicable provisions of Section 242 and 228 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, said SGS-THOMSON Microelectronics, Inc. has caused this certificate to be signed by Archie McK. Malone, its Vice President, and attested by Steven K. Rose, its Secretary, this 18th day of May, 1998.



Archie McK. Malone  
Vice President

ATTEST:



Steven K. Rose  
Secretary

**State of Delaware**  
**Office of the Secretary of State**

---

EXHIBIT A

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "SGS-THOMSON MICROELECTRONICS, INC.", CHANGING ITS NAME FROM "SGS-THOMSON MICROELECTRONICS, INC." TO "STMICROELECTRONICS, INC.", FILED IN THIS OFFICE ON THE NINETEENTH DAY OF MAY, A.D. 1998, AT 10 O'CLOCK A.M.

A FILED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS.



  
Edward J. Freel, Secretary of State

0779840 8100

981191400

RECORDED: 11/02/1999

AUTHENTICATION: 9088969

DATE: 05-19-98

PATENT

REEL: 010340 FRAME: 0868